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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/784,035	02/20/2004	Junkyung Kim	06181/0200909-US0	1634
7278	7590	10/24/2006	EXAMINER	
DARBY & DARBY P.C. P. O. BOX 5257 NEW YORK, NY 10150-5257			RONESI, VICKEY M	
			ART UNIT	PAPER NUMBER
			1714	

DATE MAILED: 10/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/784,035

Applicant(s)

KIM ET AL.

Examiner

Vickey Ronesi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>2/20/04</u> . | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Takekoshi '052 (US 5,530,052).

Takekoshi '052 discloses compositions which are nanocomposites (col. 2, line 30) comprising a layered clay (col. 2, lines 37-67) and macrocyclic oligomers including poly(ethylene terephthalate), poly(butylenes terephthalate), poly(ethylene-2,6'-naphthalenedicarboxylate) (col. 5, lines 11-22), wherein the oligomer is polymerized with no more than 20 wt % layered clay (col. 5, lines 48-62). In the examples, 0.20 g sodium montmorillonite is used and mixed with 4.8 macrocyclic oligomer based on poly(ethylene terephthalate) and polymerized at 190°C (col. 6, lines 1-58). See other examples in Tables I and II.

In light of the above, it is clear that Takekoshi '052 anticipates the presently cited claims.

***Claim Rejections - 35 USC § 102/103***

2. Claims 5-10 and 12-15 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Takekoshi '052 (US 5,530,052).

The discussion with respect to Takekoshi '052 in paragraph 1 above is incorporated here by reference.

While Takekoshi '052 discloses nanocomposites, it fails to disclose the distance between layers of 50 nm or more. Nevertheless, it is considered that the layers of clay in Takekoshi '052 are inherently at least 50 nm given that Takekoshi '052 discloses nanocomposites and a method of polymerization of cyclic oligomers like presently claimed. Case law holds that a material and its properties are inseparable. *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

In light of the above, it is clear that Takekoshi '052 anticipates the presently cited claims.

Alternatively, Takekoshi '052 fails to explicitly disclose a separation of clay layers of at least 50 nm, nevertheless, it is considered that it would have been obvious to one of ordinary skill in the art to obtain a nanocomposite with at least 50 nm spacing of clay given that Takekoshi '052 discloses nanocomposites and a method of polymerization of cyclic oligomers like presently claimed

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takekoshi '052 (US 5,530,052).

The discussion with respect to Takekoshi '052 in paragraph 1 above is incorporated here by reference.

Takekoshi '052 fails to explicitly disclose the length of polymerization, however, it is considered that it would have been well within the capabilities of one of ordinary skill in the art to utilize suitable polymerization times in order to obtain full polymerization. Furthermore, given that Takekoshi '052 discloses the same cyclic oligomer to be polymerized under the same conditions like presently claimed (i.e., temperature), the length of time is dependent on this parameter and would therefore be a length of 5-10 minutes.

4. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takekoshi '052 (US 5,530,052) in view of Takekoshi '626 (US 6,960,626).

The discussion with respect to Takekoshi '052 in paragraph 1 above is incorporated here by reference.

Takekoshi '052 fails to disclose polymerization carried out by reaction molding process such as reaction injection molding or reactive extrusion but appears to be open to any method of mixing the layered clay with the cyclic oligomer (col. 5, lines 47-62).

Takekoshi '626 discloses a macrocyclic oligomer polymerized with a magnesium silicate and teaches that the cyclic oligomer is mixed with the layered silicate is well-suitable to low-pressure processes including reaction injection molding (col. 3, lines 6-12).

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Given that Takekoshi '052 is open to various ways of combining the cyclic oligomer and layered clay and further given the teachings by Takekoshi '626 regarding such compositions and their suitability for reaction injection molding, it would have been obvious to one of ordinary skill in the art to polymerize the cyclic oligomer and layered clay of Takekoshi '052 in reaction injecting molding.

### *Conclusion*


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vickey Ronesi whose telephone number is (571) 272-2701. The examiner can normally be reached on Monday - Friday, 8:30 a.m. - 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571) 272-1119. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

10/18/2006  
Vickey Ronesi



  
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